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IS 4390 : 2001
(Amalgamating IS 5152 : 1969)

भारतीय मानक

वस्त्रादि — विलायक में घुलनशील पदार्थों का वस्त्रादि सामग्री में ज्ञात करने की पद्धति

(पहला पुनरीक्षण)

Indian Standard

TEXTILES — METHOD FOR ESTIMATION OF SOLVENT SOLUBLE MATTER IN TEXTILE MATERIAL

(First Revision)

ICS 59.080.01

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2001 **Price Group 2**

Chemical Methods of Test Sectional Committee, TX 05

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standard, after the draft finalized by Chemical Methods of Test Sectional Committee had been approved by Textile Division Council.

This Indian Standard was first published in 1967 and has been revised to accommodate use of benzyl alcohol as solvent for evaluating solvent soluble matter in cotton textiles presently covered in IS 5152 : 1969. As a result of above IS 5152 : 1969 stands withdrawn.

There is no International standard on the subject.

The composition of the Committee responsible for formulation of this standard is given in Annex A.

In reporting the result of a test made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

TEXTILES — METHOD FOR ESTIMATION OF SOLVENT SOLUBLE MATTER IN TEXTILE MATERIAL

(First Revision)

1 SCOPE

This standard prescribes a method for determination of solvent soluble matter in textile materials using benzene-methyl alcohol mixture or ethyl ether as solvent.

2 REFERENCES

The Indian Standards given below contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of standard given below:

IS No.	*Title*
196 : 1966	Atmospheric conditions for testing (*revised*)
336 : 1973	Ether (*second revision*)
517 : 1986	Methanol (methyl alcohol) (*second revision*)
1070 : 1992	Reagent grade water (*third revision*)
1840 : 1961	Benzene, reagent grade

3 PRINCIPLE

A known amount of test sample is extracted with benzene-methyl alcohol mixture or ethyl ether as solvent. The solvent is dried and the residue is expressed as the percentage of the weight of the conditioned textile material.

4 SAMPLING

4.1 Sampling for Fibre and Yarn

4.1.1 *Lot*

The quantity of fibre or yarn from the same source shall constitute a lot. If the lot contains more than 200 kg of fibre or yarn, it shall be divided in sub-lots, each weighing 200 kg or less.

4.1.2 From the sub-lot 15, increments each approximately weighing 10 g shall be taken from different parts so that a representative sample is obtained. All the increments, thus, collected shall be thoroughly mixed to get the test sample.

4.2 Sampling of Fabrics

4.2.1 *Lot*

The quantity of fabric manufactured under relatively uniform conditions shall constitute a lot.

4.2.2 The number of pieces to be selected from a lot shall be as given below. The pieces selected shall constitute the gross sample:

Lot Size	*Sample Size*
Up to 100	3
101 to 300	4
301 to 500	5
501 and above	7

4.2.3 From each piece in the gross sample about 25 g of fabric shall be taken out from at least two different parts. The parts shall be then cut into further smaller pieces and thoroughly mixed. The pieces thus collected shall constitute a test sample.

5 PREPARATION OF TEST SPECIMENS

Cut the test sample into small pieces. Mix all the pieces thoroughly. Draw at least three test specimens from among these pieces such that each specimen weighs about 5 g.

6 CONDITIONING OF TEST SPECIMENS

Prior to test, the test specimens shall be conditioned for 24 hours for moisture equilibrium in a standard atmosphere at 65 ± 5 percent relative humidity and 27°±2°C temperature (*see also* IS 196).

7 APPARATUS

7.1 Soxhlet Apparatus

7.2 Reflux Condenser

8 REAGENTS

8.1 Quality of Reagents

Unless specified otherwise, pure chemicals shall be employed for tests and distilled water (*see* IS 1070) shall be used where the use of water or distilled water as reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

8.2 Benzene-Methyl Alcohol Mixture

Prepared by mixing three volumes of benzene (*see* IS 1840) with two volumes of methyl alcohol (*see* IS 517).

8.3 Ethyl Ether

Redistilled (*see* IS 336).

9 PROCEDURE

9.1 Condition the test specimens to moisture equilibrium in standard atmosphere (*see* **6**). Weigh each test specimen accurately.

9.2 Take one test specimen and put it in thimble of Soxhlet apparatus (*see* Note). Extract the specimen with 150 ml of benzene methyl alcohol mixture or ethyl ether in a Soxhlet apparatus for 3 hours siphoning the solvent at a minimum rate of 10 extractions per hour.

NOTE — If the thimble is not available, the test specimen should be wrapped in filter paper.

9.3 Reduce the extract, if necessary, by subsequent distillation to a volume of approximately 25 ml. Filter the extract through a rapid filter paper and collect the extract in a 50 ml tared flask. Wash the filter paper and the extraction flask with small portions of solvent and add the washings to the extract.

9.4 Evaporate the extract in the tared flask. Dry the residue to constant weight at 105 to 110°C and weigh.

9.5 Calculations

Calculate the percentage of solvent-soluble matter present in the textile material by the following formula:

$$p = \frac{b}{a} \times 100$$

where

p = percent, by weight, solvent-soluble matter in the test specimens;

b = Weight, in g, of the residue (*see* **9.4**); and

a = conditioned weight, in g, of the test specimen (*see* **9.1**).

9.6 Repeat the test with the remaining test specimens and calculate the solvent-soluble matter in each test specimen.

9.7 Calculate the average of the values obtained as in **9.5** and **9.6**.

10 REPORT

Report the value obtained in **9.7** and the solvent used.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Chemical Methods of Test Sectional Committee, TX 05

Organization	*Representative(s)*
Ahmedabad Textile Industry's Research Association, Ahmedabad	Shri A. B. Shah
Binny Limited, Chennai	Shri J. M. David
Central Institute for Research on Cotton Technology, Mumbai	Dr (Shrimati) C. R. Raje Dr R. H. Balasubramanya (*Alternate*)
Directorate General of Supplies & Disposals, New Delhi	Shri A. K. Sehgal Shri Samiron Roy (*Alternate*)
Indian Jute Industries' Research Association, Kolkata	Shri N. C. Som
Jayshree Textiles, Rishra	Dr K. K. Goswami Shri A. Nair (*Alternate*)
JCT Limited, Phagwara	Shri B. L. Kak
Man-Made Textile Research Association, Surat	Dr Sandeep R. Naik Shri M. G. Patel (*Alternate*)
Ministry of Defence (DGQA), New Delhi	Shri P. P. Naidu Shri Rama Yadav (*Alternate*)
Ministry of Defence (R&D), New Delhi	Shri Nishkam Kasturia Shri S. C. Jain (*Alternate*)
National Textile Corporation Limited, New Delhi	Shri B. R. Verma Shri P. K. Home (*Alternate*)
Office of the Development Commissioner for Handlooms, New Delhi	Shri Rajendra Kumar Shri S. C. Jain (*Alternate*)
Office of the Textile Commissioner, Mumbai	Shri S. K. Patra Shri R. A. Lal (*Alternate*)
The Synthetics & Art Silk Mills Association Ltd, Mumbai	Shri V. S. Chalke
Suditi Industries Ltd, Navi Mumbai	Shri R. Chinraj Shri Rajendra Gaikwad (*Alternate*)
Technological Institute of Textile & Sciences, Bhiwani	Dr J. K. Sharma Dr D. N. Sharma (*Alternate*)
Textiles Committee, Mumbai	Shrimati M. V. Rane
Textiles & Engg Institute, Ichalkaranji	Prof S. K. Laga Prof S. S. Chinchwada (*Alternate*)
The Arvind Mills Limited, Ahmedabad	Dr J. J. Shroff
The Bombay Dyeing & Mfg Co Ltd, Mumbai	Shri N. Satish Rao Shri A. S. Gore (*Alternate*)
The Bombay Millowners' Association, Mumbai	Shri S. V. Soudagar Shri Mahesh Sharma (*Alternate*)
The Bombay Textile Research Association, Mumbai	Shri A. V. Afini Shri C. J. Kolgaonkar (*Alternate*)
The Mafatlal Industries Ltd, Navsari	Dr U. V. Vyas Shri J. P. Deshpande (*Alternate*)
The Synthetics & Art Silk Mills' Research Association, Mumbai	Shri K .S. Taraporewala Shri D. L. Shah (*Alternate*)
The South India Textile Research Association, Coimbatore	Shri K. P. Janakiraman
University Department of Chemical Technology, Mumbai	Prof M. D. Teli
Veermata Jeejabai Technological Institute, Mumbai	Prof G. W. Joshi Prof K. D. Gawand (*Alternate*)
Wool Research Association, Mumbai	Shrimati G. P. Rane Shri V. C. Panse (*Alternate*)
In personal capacity (*2, Shri Siddhi Vinayak Co-op Housing Society Veer Savarkar Marg Prabhadevi, Dadar Mumbai*)	Shri M. D. Dixit
BIS Directorate General	Shri R. K. Dua, Director & Head (Textiles) [Representing Director General (*Ex-officio*)]

Member-Secretary
Shri Anil Kumar
Deputy Director (Textiles), BIS

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